David S. Weiss
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(617) 574-6400 (tel)
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December 17, 2013

Mr. Ernie Steinauer, Chair
Nantucket Conservation Commission
Town of Nantucket
16 Broad Street
Nantucket, MA 02554

Re: Joint Request for Certification of Emergency: Sconset Bluff – Baxter Road

Dear Chairman Steinauer:

This firm, together with Messrs. Reade and Cohen of Reade, Gullicksen, Hanley, Gifford & Cohen, LLP, is counsel to Siasconset Beach Preservation Fund, Inc. ("SBPF"). This letter constitutes a joint request from SBPF and the Town of Nantucket for permission to perform an emergency project, and for certification that the project is an emergency under §136-5 of the Nantucket Town Code. Please see the attached letter in support by Kara Buzanoski, Director of Public Works, on behalf of the Town of Nantucket, which was separately authorized by the Board of Selectmen.

The Commission has previously addressed two other requests for emergency certification. One was submitted by SPBF dated November 26, 2013 ("SBPF ECR 1") and was acted on by the Commission on November 27, 2013. One was submitted by the Town on December 3, 2013 ("TON ECR 1") and acted on by the Commission on December 4, 2013. On December 10, 2013, the Massachusetts Department of Environmental Protection ("DEP"), after review of SBPF ECR 1 and TON ECR 1 pursuant to 310 CMR 10.06(5), issued an Emergency Certification. A copy of DEP's transmittal letter (which expressly states that DEP "has exercised its authority pursuant to 310 CMR 10.06(5) to review the Emergency Certification application filed by the Town of Nantucket") and certification is attached.

The work that is proposed (the "Joint Emergency Project") is required in response to the ongoing erosion of Sconset Bluff (sometimes called "Siasconset Bluff") which has reached the point of posing an immediate threat in the current storm season to Baxter Road, a public way, and associated utilities as well as the homes seaward and landward of Baxter Road in the "Emergency Project Area" shown on the project plans submitted with SBPF ECR 1. Because significant analysis has been done in connection with TON ECR 1, SBPF ECR 1, and two distinct notices of intent (Baxter Road Temporary Stabilization Project, DEP File No. 048-2610 and Baxter Road and Sconset Bluff Storm Damage Prevention Project, DEP File No. 048-2581), both of which are presently pending before the Commission, more complete information has

been presented to the Commission than is sometimes the case with respect to a request for emergency certification. The submissions presented with and in support of SBPF ECR 1 have already been provided to the Commission and are incorporated here by reference as part of the record on this request. In addition, we enclose copy of the resume of Dr. Michael Bruno and SBPF's November 29, 2013 Request for Review Pursuant to 310 CMR 10.06(5) addressed to DEP, as well as supplemental materials from Ocean and Coastal Consultants dated December 6, 2013 that were provided to DEP.

The Joint Emergency Project is proposed for 91-105 Baxter Road in accordance with the emergency criteria set forth in the memo from Epsilon Associates dated November 25, 2013, submitted with SBPF ECR 1, as amended by any conditions set forth in the Emergency Certification issued by DEP. Other than the proposed reduction in length of coverage, the Emergency Project is similar to the Baxter Road Temporary Stabilization Project (DEP File No. 048-2610) for 85-107A Baxter Road described in detail in the letters and plans submitted during the NOI process by Milone & MacBroom dated October 25, 2013, November 1, 2013, November 5, 2013, and November 19, 2013, submitted herewith. In overview, the Emergency Project involves the installation of four 45-foot circumference geotextile tubes, which are approximately 19 wide, 6.5 feet tall, and 100-200 feet long. The bottom tube will be buried in the beach to elevation 0.0 MLW and the top tube will be set at elevation 26.0 MLW. A scour apron and four-foot-diameter anchor tube are included, extending five feet seaward of the lowest geotextile tube at elevation 0.0 MLW. The four geotubes will overlap by approximately 7 feet, yielding an effective slope of 2 Horizontal:1 Vertical. There will be shorter return tubes on the return ends to minimize flanking. The Project will be installed at the toe of the bank parallel to Baxter Road from 91-105 Baxter Road (only the narrowest portion of 105 Baxter Road will be included), for an approximate length of just under 900 feet. The geotextile tubes will be covered with sand. The sand cover and sacrificial sand mitigation is as provided in the conditions set forth by DEP in its Emergency Certification. The Project is readily removable. Failure criteria and information related to protocols for and cost of removal are set forth in the October 25, 2013, November 5, 2013, and November 19, 2013 letters from Milone & MacBroom, submitted with SBPF ECR 1.

In its action under §136-5 of the Nantucket Town Code on SBPF ECR 1 the Commission expressed three concerns with respect to the design which is the basis of the Joint Emergency Project, each of which has been addressed subsequently.

(1) The Commission expressed concern that the 'public agency' test (which appears in both §136-5 of the Nantucket Town Code and 310 CMR § 10.06) had not been met. In its Emergency Certification, DEP identifies itself as the agency satisfying that test. Further, the Town of Nantucket has now joined this application. Therefore, this concern is moot.

(2) The Commission expressed concern that 'protection of public health and safety' test be met. The Commission's subsequent action on TON ECR 1 and the DEP

Emergency Certification both establish that the public health and safety are risk in the Emergency Project area. Therefore, this concern is moot.

(3) The Commission expressed concern that the work proposed was more extensive than necessary to abate the emergency. DEP expressly concludes that "that the design of the coastal structure proposed in the Request does not go farther than necessary to protect these homes and essential public infrastructure serving the homes," especially in light of the severity and frequency of storms in this area. Further, DEP stated that it "deems the allowed work necessary to abate the present threat to public safety from storm damage to buildings, Baxter Road and water infrastructure", and finds that the "implementation of the [sand] nourishment plan [in the conditions it sets forth] will mitigate any potential difference in down drift impacts between the [Joint Emergency Project]...and the hybrid design approved in the Town's Certification [issued to it by the Commission]". Additionally, SBPF has sought out national and international sources of the jute material that would be used for the hybrid project, and has been informed that due to manufacturing, shipping, fabrication, and delivery times, the jute material needed for the TON ECR 1 could not be available on site for at least 8 weeks, which is outside the 30 period for work pursuant to an emergency certification. Accordingly, the geotube-only project is not more extensive than necessary to abate the emergency, and the hybrid project is simply not viable for this purpose, and the difference between the two is properly addressed through mitigation, not by weaker protection.

Therefore, the concerns raised by the Commission previously are now abated by subsequent determinations or actions of the Commission, the Town and DEP, as well as new information provided herewith.

A full analysis of the issues pertinent to the determination of this request is included in materials submitted herewith and with SBPF ECR 1 and incorporated herein, and have been fully aired before the commission. We do not recite them again in detail.[1]

[1] The pre-1978 status of the homes in the Emergency Project area is presented on Figure 11 (titled "Pre-1978 House Status") prepared by Epsilon Associates, submitted with SPBF ECR 1. In 310 CMR 10.30 it is provided that coastal engineering structures "shall be permitted" to protect pre-1978 homes. DEP expressly finds that the project is within the scope of that provision. There is a parallel provision in of the Nantucket Wetlands Regulations. We note the "20% change" language incorporated into certain aspects of the portions of the Nantucket Wetlands Regulations which address pre-1978 structures. That language does not of course apply to infrastructure. Nothing in this request is, or is intended to be, a waiver, admission, or acknowledgment adversely affecting any claim or argument available to SBPF that a municipality has jurisdiction or authority to impose more stringent limitations on projects that "shall be permitted" under the Wetlands Protection Act Regulations than those provided for in those Regulations. SBPF expressly reserves all of its rights with respect thereto.

We note that the Regulations contemplate action by the Commission within twenty-four hours of a request for emergency certification (310 CMR 10.6(5)), and in the event the Commission does not act within that period of time the request may be brought to the Department of Environmental Protection for action by it in lieu of the Commission. The Regulations also contemplate that an NOI is to be filed after any emergency certification, in the course of which compliance with performance standards will be evaluated. Although that evaluation is for that subsequent proceeding, submitted herewith is a second memo from Epsilon Associates dated November 26, 2013 presenting an analysis showing satisfaction of the relevant standards.

We are prepared to work with you to facilitate a response to this request as expeditiously as possible.

Respectfully submitted,

David S. Weiss

DSW:vmm
Enclosures

December 10, 2013 DEP Emergency Certification and Transmittal Letter
November 29, 2013 Request For Review Pursuant to 310 CMR 10.06(5)
Ocean and Coastal memo of December 6, 2013
Resume of Dr. Michael Bruno

cc: Mr. Jeffrey Carlson (Conservation Agent)
Ms. Libby Gibson (Town Manager)
Ms. Kara Buzanoski (Director of DPW)
Mr. Robert DeCosta (Board of Selectmen)
Mr. David Johnston (Deputy Regional Director DEP SERO)

SBPF
Messrs. A Reade and S. Cohen, Esqs.
Epsilon Associates

GSDOCS\2292575.1

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

DEVAL L. PATRICK
Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

BY EMAIL AND FIRST CLASS MAIL

December 10, 2013

Siasconset Beach Preservation Fund
c/o David S. Weiss, Esq.
Goulston & Storrs
400 Atlantic Avenue
Boston, Massachusetts 02110-3333

RE: NANTUCKET—Wetlands
Emergency Certification
91-105 Baxter Road

Dear Attorney Weiss:

The Department of Environmental Protection is in receipt of your November 29, 2013, request on behalf of the Siasconset Beach Preservation Fund ("SBPF") for an Emergency Certification ("Request") proposing the installation of 4 layers of sand-filled Geotubes in a terrace pattern along the toe and face of an eroding coastal bank and on a coastal beach to abate the threat of coastal erosion to several existing pre-1978 dwellings and a section of Baxter Road with associated underground public utilities. In considering your request, the Department also exercised its authority pursuant to 310 CMR 10.06(5) to review the Emergency Certification application filed by the Town of Nantucket, filed subsequent to your request, and approved by the Conservation Commission on December 12, 2013 ("Certification") for an area of the bank and beach that overlaps and extends beyond the area that is the subject of your request.

The Department applied the criteria at 310 CMR 10.06(1) that the work allowed under an emergency certification not include work beyond that which is necessary to abate the emergency. In reviewing the extensive information in the Request and the Certification that documented the threat presented by storm-related erosion, the Department also applied the criterion at 310 CMR 10.30(3) which provides that a coastal engineering structure "shall be permitted" to protect homes constructed prior to 1978 from storm damage. This regulation creates an exception to the general rule that precludes the installation of hard armoring of coastal banks. Based on the facts presented in the Request, this exception applies to the homes identified in the area subject to the determination of an emergency.

The Department concludes that the design of the coastal structure proposed in the Request does not go farther than necessary to protect these homes and essential public infrastructure serving the homes. In making this determination, the Department considered the specific facts presented

by the proponents including, without limitation, the proximity of the homes and infrastructure to the edge of the coastal bank, the ability of the four Geotubes to withstand a significant storm event and the threat posed by successive storm events.

The total length of the SBPF proposed project is approximately 900 feet long running between 91-105 Baxter Road. In the documentation supporting SBPF's conclusion of the emergency status for the homes and public infrastructure, it was concluded that the engineering criteria for installation of a coastal structure also applied to Lot 87. This Lot also retreated 40' in the previous year. The Town's Certification also concluded that an emergency condition existed at Lot 87. We concur that an emergency condition exists at this location and encourage the SBPF and the Town to coordinate efforts to abate the emergency.

In addition, the Request has proposed to place an initial sand cover over the Geotubes and annually thereafter as mitigation. This Emergency Certification requires that SBPF promptly file a Notice of Intent (NOI) under the Wetlands Protection Act for installation and maintenance of the proposed Geotubes, as well as for ongoing beach nourishment as mitigation. The Emergency Certification sets out a mitigation and nourishment plan that will remain in effect pending the issuance of a final Order of Conditions. The implementation of the nourishment plan will mitigate any potential difference in down drift impacts between the four Geotube designs and the hybrid design approved in the Town's Certification.

The Department is issuing the enclosed Emergency Certification allowing the installation of the requested sand-filled Geotubes as conditioned herein. The Department deems the allowed work necessary to abate the present threat to public safety from storm damage to buildings, Baxter Road and water infrastructure. This Emergency Certification is issued pursuant to the Wetlands Protection Act, MGL, c. 131, s. 40, and subject to certain special conditions.

If you have any questions concerning this matter please contact Jim Mahala at (508) 946-2806.

Sincerely,

Philip Weinberg
Regional Director

W/JM

Enclosure

cc: Nantucket Conservation Commission

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Emergency Certification Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

A. Emergency Information

Issuance From: MassDEP-Southeast Regional Office
Issuing Authority

Issued To: Siasconset Beach Preservation Fund (SBPF), c/o David S. Weiss, Esq.
Name
Goulston & Storrs, 400 Atlantic Ave., Boston, MA 02110-3333
Address

1. Site Location: 91-105 Baxter Road

2 Reason for Emergency:

Eroding coastal bank imminently threatens pre-1978 dwellings and Baxter Road and associated underground public utilities. The erosion poses an immediate threat to public safety.

3. Public agency to perform work or public agency ordering the work to be performed:

Massachusetts Department of Environmental Protection. The Town of Nantucket and the Nantucket Conservation Commission concurred on the emergency conditions in the area subject to the Certification.

4. Date of Site Visit: 12/5/2013 Start Date: 12/11/2013 End Date: 1/10/2014
* no later than 30 days from start date or 60 days in the case of an Immediate Response Action approved by DEP to address an oil/hazardous material release.

5. Work to be allowed*:

Installation of 900 linear feet of 4 layers of sand-filled Geotubes with sand cover as shown on plans entitled: Baxter Road Temporary Stabilization NOI Submission, revised November 5, 2013 with the exception that this Emergency Certification is only for 91-105 Baxter Road.

B. Signatures

Certified to be an Emergency by this Issuing Authority.

Signature:

Philip Weinberg, Regional Director

12/10/13
Date

WPA Emergency Certification Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

C. General Conditions

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Emergency Certification or subject to enforcement action.

2. This Emergency Certification does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of property rights.

3. This Emergency Certification does not relieve the applicant or any other person of the necessity of complying with all other applicable federal, state, or local statues, ordinances, by laws or regulations.

4. Any work conducted beyond that described above, and any work conducted beyond that necessary to abate the emergency, shall require the filing of a Notice of Intent.

5. The Agent or members of the Conservation Commission and the MassDEP shall have the right to enter and inspect the area subject to this Emergency Certification at reasonable hours to evaluate compliance with this Certification, and may require the submittal of any data deemed necessary by the Conservation Commission or the Department for the evaluation.

6. This Emergency Certification shall apply to any contractor or any other person performing work authorized under this Certification.

7. No work is authorized beyond 30 days from the date of this certification without extension by the Commissioner of MassDEP or his/her designee.

D. Special Conditions

SEE ATTACHED SHEET

E. Appeals

The Department may, on its own motion or at the request of any person, review: an emergency certification issued by a conservation commission and any work permitted thereunder; a denial by a conservation commission of a request for emergency certification; or the failure by a conservation commission to act within 24 hours of a request for emergency certification. Such review shall not operate to stay the work permitted by the emergency certification unless the Department specifically so orders. The Department's review shall be conducted within seven days of: issuance by a conservation commission of the emergency certification; denial by a conservation commission of the emergency certification; or failure by a conservation commission to act within 24 hours of a request for emergency certification. If certification was improperly granted, or the work allowed thereunder is excessive or not required to protect the health and safety of citizens of the Commonwealth, the Department may revoke the emergency certification, condition the work permitted thereunder, or take such other action as it deems appropriate.

Special Conditions for Slasconset Beach Preservation Fund Emergency Certification for 91-105 Baxter Road:

1. This Emergency Certification authorizes the installation of 900 linear feet of 4 layers of sand filled Geotubes as shown on the referenced plans. The SBPF also proposes the placement of 14.3 cubic yards per linear foot of sand. The Department, however, requires the initial placement of 18 cubic yards per linear foot of sand for mitigation purposes. Ongoing beach nourishment shall be in accordance with condition 8 below.
2. All sand used to fill and cover the Geotubes shall be imported from an off-site source and shall be compatible with the existing beach sediments.
3. The sand-filled Geotubes shall be tapered into the beach/bank at the southern and northern ends to minimize end effects.
4. Within 30 days of this certification, the SBPF shall file a Notice of Intent in order to (a) install and maintain the Geotubes and (b)incorporate mitigation (beach nourishment) into the proposed project design. The SBPF shall diligently pursue and obtain a Final Order of Condition under the Wetlands Protection Act for ongoing beach nourishment and other appropriate mitigation as deemed necessary.
5. The SBPF shall be responsible for the retrieval and proper disposal of all geotextile products associated with this emergency project in the event wave action and erosion destroys or otherwise causes damage to the Geotube system.
6. This Emergency Certification does not relieve the applicant/owner from complying with the Town of Nantucket Wetland Bylaw.
7. The beach shall continue to be monitored through the ongoing quarterly surveying program conducted by Woods Hole Group.
8. Sand mitigation will be at a rate of 22 cubic yards per linear foot in accordance with the following schedule:

    a. Provide initial cover of 18 cubic yards per linear foot immediately following construction (December 2013). The reason for this is to provide the initial cover and to provide a large upfront volume of sand while observing how the entire system performs into the first months of installation.

    b. January through March 2014: Provide the remaining four cubic yards per linear foot on an as-needed basis.

    c. Annual in April starting in 2014: Provide additional sand to obtain a minimum of 12 cubic yards per linear foot of sand cover. Twelve cubic yards per linear foot is the minimum sand volume required to provide the desired two minimum feet of cover. If some portion of the previous year's sand is in place at the time of April nourishment then the volume needed to get to 12 cubic yards per linear foot will be provided, with the remaining sand added in November. For example, if 10 cubic yards per linear foot of sand is needed in April to meet the 12 cubic yard minimum, then the remaining two cubic yards will b e added in November instead of April.

    d. Annually in November starting in 2014; Add an additional six cubic yards per linear foot plus any excess volume left over from April requirement. The reason for this is to ensure that the bulk of the mitigation volume is available in November for potential mobilization during winter storms.

    e. Annually November through March: Add the remaining four cubic yards per linear foot on an as-needed basis, in accordance with the replenishment trigger presented in our November 12, 2013 letter. If the 22 cubic yards per linear foot volume is not placed in its entirety before March 1, the balance of the sand will be place on March 1.

    f. End volumes will be replaced and nourished on the same schedule as outlined above. Delivery tickets from sand supplier will be provided to the Department and Conservation Commission to document the total volume of sand provided.

Ocean and Coastal Consultants | COWI

ADDRESS Ocean and Coastal
Consultants, Inc.
35 Corporate Drive
Suite 1200
Trumbull, CT 06611

TEL 203-268-5007
FAX 203-268-8821
WWW ocean-coastal.com

MEMO

TITLE Sconset Coastal Analysis Summary
DATE 6 December 2013
TO SBPF
COPY Epsilon Associates
FROM Azure Dee Sleicher, P.E.
PROJECT NO 210019.1

Ocean and Coastal Consultants, Inc. (OCC) performed coastal analyses to determine design conditions and proposed geometry for the emergency stabilization project along Sconset Bluff. This memo provides a brief summary of methodologies, calculations and results which demonstrate that the proposed 4-tiered, stacked geotextile tube design with toe at 0.0 ft MLW and crest at +26.0 ft MLW is appropriate as a means to protect the pre-1978 homes along the landward and seaward sides of Baxter Road and Baxter Road based on standard coastal engineering practices of the U.S. Army Corps of Engineers (USACE) and FEMA.

Design Recurrence Interval:

The 1-percent-chance-annual storm, also referred to as a "100-year" storm has a 1% chance of being equaled or exceeded in any given year. This recurrence interval is the standard of measure by FEMA for flood mapping and mitigation as well as the USACE for their Hurricane and Storm Damage Risk Reduction System. Wave data for 1982-2008 from NOAA buoy 44008 (54 NM SE Nantucket) indicate numerous occasions when the significant wave height exceeded 10 meters (exceeding the "100-year" design wave height of 28.8') and numerous occasions when the dominant wave period exceeded the "100-year" design value of 15 seconds. These data suggest that 100-year storm conditions are experienced at the site on a much more frequent basis than once every 100 years. The project must be designed for the coastal environment at Sconset. Designing to anything less than the "100-year" storm conditions risks a chance of failure during major storms or even lower magnitude storms that occur in rapid succession when protection is most needed. For these reasons, the "100-year" storm is an appropriate level of design for this project and is the minimum design level required to abate the emergency.

Stillwater Level (SWL):

"100-year" SWL = 10.2 ft MLW per FEMA Flood Insurance Study dated November 6, 1996. This value is likely underestimated at this point in time based on sea level rise and other factors but is being used as best available data for this project.

goulston&storrs
counsellors at law

David S. Weiss
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November 29, 2013

VIA ELECTRONIC SUBMISSION

Southeast Regional Office
Massachusetts Department of Environmental Protection
20 Riverside Drive
Lakeville, MA 02347
Attn: Wetlands Section

Re: Request for Review Pursuant to 310 CMR § 10.06(5)
Regarding Emergency Certification Request
Applicant – Siasconset Beach Preservation Fund, Inc.
Property Location – Sconset Bluff, Nantucket
From No. 91 Baxter Road to No. 105 Baxter Road

Dear Sir/Madam:

On behalf of Siasconset Beach Preservation Fund, Inc., ("SBPF") the party requesting permission to perform emergency work and certification of emergency status pursuant to 310 CMR 10.06 in the above-referenced matter, we hereby submit this letter that, together with the attachments (some of which are provided by electronic link), constitutes SBPF's Request for Review pursuant to 310 C.M.R. § 10.06(5) (the "Request for Review"). SBPF's Request for Review pertains to a Request for Certification of Emergency: Sconset Bluff – Baxter Road (the "Initial Request") submitted to the Nantucket Conservation Commission (the "Commission") on November 26, 2013. A copy was provided to Mr. David Johnston, Deputy Regional Director DEP SERO, and a link to the attachments to the Initial Request was provided to your office.

On November 27, 2013, the Commission met to consider the Initial Request, and at that meeting a vote was taken to deny the request. While it is clear that the Commission has voted to deny, it is not yet clear whether a written order or decision will follow. Regardless of whether any writing may be forthcoming, the matter is ripe for review by DEP SERO at this time. If the vote itself constitutes denial within the meaning of 310 CMR § 10.06(5), then review is appropriate and if the vote by itself does not constitute denial within the meaning of 310 CMR § 10.06(5), then the matter is appropriate for review at this time under the provisions of 310 CMR § 10.06(5) that govern in the absence of grant or denial within 24 hours of receipt of a request for emergency certification.

The work that is proposed (the "Emergency Project") is required in response to the ongoing erosion of Sconset Bluff (sometimes called "Siasconset Bluff") which has reached the point of posing an immediate threat in the current storm season to Baxter Road, a public way, and associated utilities as well as the homes seaward and landward of Baxter Road in the from No. 91 to No. 105 Baxter Road shown s the "Emergency Project Area" on the project plans submitted herewith. Because significant analysis has been done in connection with two distinct notices of intent (Baxter Road Temporary Stabilization Project, DEP File No. 048-2610 and Baxter Road and Sconset Bluff Storm Damage Prevention Project, DEP File No. 048-2581), both of which are presently pending before the Commission, we are able to present more complete information than is sometimes the case with respect to a request for emergency certification.

As a result of the substantial analysis that has been undertaken in connection with the pending Notices of Intent, sufficient information has been developed so that the proposed Emergency Project minimizes, mitigates, and provides monitoring protocols for any perceived impacts on third-parties, as is more fully set forth in the memos from Milone & MacBroom dated November 1, 2013, November 12, 2013, and November 19, 2013; the memo from Epsilon Associates dated November 1, 2013; and the correspondence from Dr. Michael Bruno dated November 25, 2013, submitted herewith (with which we have included Dr. Bruno's resume for your convenience). The harm that will result from failing to certify that emergency and permit the Emergency Project to go forward together with the potential for removal of the Proposed Project should that prove necessary, far outweighs any risks thought to be associated with the proposed work.

I. PROJECT BACKGROUND

The work that is proposed (the "Emergency Project") is required in response to the ongoing erosion of Sconset Bluff (sometimes called "Siasconset Bluff") which has reached the point of posing an immediate threat in the current storm season to Baxter Road, a public way, and associated utilities as well as the homes seaward and landward of Baxter Road in the "Emergency Project Area" shown on the project plans submitted herewith. Because significant analysis has been done in connection with two distinct notices of intent (Baxter Road Temporary Stabilization Project, DEP File No. 048-2610 and Baxter Road and Sconset Bluff Storm Damage Prevention Project, DEP File No. 048-2581), both of which are presently pending before the Commission, we are able to present more complete information than is sometimes the case with respect to a request for emergency certification.

The Emergency Project is proposed for 91-105 Baxter Road in accordance with the emergency criteria set forth in the memo from Epsilon Associates dated November 25, 2013, submitted herewith. Other than the proposed reduction in length of coverage, the Emergency Project is similar to the Baxter Road Temporary Stabilization Project (DEP File No. 048-2610) for 85-107A Baxter Road described in detail in the letters and plans submitted during the NOI process by Milone & MacBroom dated October 25, 2013, November 1, 2013, November 5, 2013, and November 19, 2013, submitted herewith. In overview, the Emergency Project involves the installation of four 45-foot circumference geotextile tubes, which are approximately

19 wide, 6.5 feet tall, and 100-200 feet long. The bottom tube will be buried in the beach to elevation 0.0 MLW and the top tube will be set at elevation 26.0 MLW. A scour apron and four-foot-diameter anchor tube are included, extending five feet seaward of the lowest geotextile tube at elevation 0.0 MLW. The four geotubes will overlap by approximately 1/3 of their circumference, yielding an effective slope of 2 Horizontal:1 Vertical. There will be shorter return tubes on the return ends to minimize flanking. Jute fabric will be placed on the upper bank face; and vegetation will be planted in the following spring. The Project will be installed at the toe of the bank parallel to Baxter Road from 91-105 Baxter Road (only the narrowest portion of 105 Baxter Road will be included), for an approximate length of just under 900 feet. The geotextile tubes will be covered with sand. The sand cover will be maintained and sacrificial sand will be added for protection and to ensure a minimum volume (equivalent to the annual volume contributed by the eroding coastal bank) is contributed annually. The Project is readily removable. Failure criteria and information related to protocols for and cost of removal are set forth in the October 25, 2013, November 5, 2013, and November 19, 2013 letters from Milone & MacBroom, submitted herewith.

II. THE COMMISSION'S VOTE

As stated above, the Initial Request and supporting material were submitted to the Commission on November 26, 2013 and the Commission met on November 27, 2013 to address the Initial Request. Mr. Steven Cohen, Esq., of Reade, Gullicksen, Hanley, Gifford & Cohen, LLP, appeared on behalf of SBPF. Six of the Commission's seven members were present.

The Commission voted 5-1 to deny the Initial Request and included in their motion to deny was the finding that the Initial Request did not satisfy three criteria: 1) no public agency ordering or performing the project, 2) not protecting public health or safety, and 3) proposal is more than necessary to abate the emergency.

III. GROUNDS FOR APPEAL

There can be no doubt that there is an emergency.

There can be no doubt that, to be performed effectively, the Emergency Project cannot await compliance with the notice requirements and appeal period associated with the filing of a notice of intent. As is established by the memos from Epsilon Associates dated November 1, 2013 and November 25, 2013 submitted herewith, the average long-term rate of retreat of the Bluff from 85-107A Baxter Road has been 4.6 feet/year, though erosion greater than or less than this rate can occur in a given year. Indeed, last year, in particular locations, the edge of the Bluff retreated landward as much as 40 feet, as presented in the memo from Epsilon Associates dated November 25, 2013. The Town of Nantucket had already concluded that "certain private homes located on or near Siasconset Bluff and Baxter Road, a public way, may be imminently

threatened with damage and/or loss and destruction due to severe erosion of the bluff which has intensified since the winter of 2012-2013... [and] an emergency exists that threatens public roads and other assets from imminent destruction" (Memorandum of Understanding between the Town of Nantucket and Sconset Beach Preservation Fund, Inc. entered into July 5, 2013, a copy of which is submitted herewith. Indeed, on October 9, 2013, in an amendment to the Memorandum of Understanding, the Town of Nantucket identified "an immediate need for emergency measures to protect Baxter Road and the associated utilities temporarily, in order to maintain vehicular access and utility service to the residential properties on Baxter Road... and there is an emergency need for an emergency response action plan outlining how the Town will provide emergency vehicular access, water supply and sanitary services to the residences at the north end of Baxter Road in the event of a failure of the roadway and that there is also a need for long-term planning for the potential eventual loss of Baxter Road..." (A copy of the Amendment to the Memorandum of Understanding is submitted herewith.) On November 8, 2013, the Town's consultant Milone & MacBroom, Inc. reported to the Director of the Department of Public Works after reviewing site conditions and conferring with Haley & Aldrich (which Milone & MacBroom identify as a well-respected geotechnical engineering firm that has been retained by SBPF) that "[t]he town can maintain travel on Baxter Road until such time as the top of the bluff is 25 feet or less from the edge of pavement. When the top of the bluff is within 25 feet of the pavement edge, the road should be closed to traffic until a detailed assessment can be completed by a geotechnical engineer." And, on November 20, 2013, the Town adopted an "Emergency Management and Marine Safety" Plan, a copy of which is submitted herewith. Nantucket's Wanacommet Water Company is mobilizing to move the water line from the east side of Baxter Road to the west side, at considerable expense, because it has determined that the east side is in immediate danger.

An analysis demonstrating the imminent risk to the roadway, utility and homes within the Emergency Project area is included in the memo from Epsilon Associates dated November 25, 2013 submitted herewith. As that analysis demonstrates, these assets are at risk of imminent loss in the current storm season.

The Chair of the Commission noted in the course of the proceedings on November 27, 2013 that Sconset Bluff has been eroding for 20,000 years and asked what was today's emergency? SBPF has been attempting to address the ongoing erosion of the bluff patiently and consistently for 20 of those years – the years during which it became clear that a devastating outcome would result from ignoring that erosion. These last 20 years should have provided a route to avoid the emergency the Town of Nantucket and the homeowners in the Emergency Project Area face today. We note that absence of an emergency was not cited as a ground for denial by the Commission, nor could it be.

There can be no doubt that the public health and safety is at risk and the Emergency Project is needed to protect it.

The long recitation included above of actions and declarations by public bodies and agencies should be enough to demonstrate the acknowledged risk to the public health and safety.

It is important to note that the proposed Emergency Project will simultaneously have multiple effects. It will protect Baxter Road, a public way, and the associated utilities, some or all of which constitute pre-1978 structures or infrastructure, and the residences on Baxter Road in the Emergency Project area, both seaward and landward of the road, all of which were constructed prior to 1978. Apart from direct danger to the structures themselves, loss of access to the residences by reason of the closure or failure of Baxter Road constitutes imminent danger to those pre-1978 residences. The pre-1978 status of the homes in the Emergency Project area is presented on Figure 11 (titled "Pre-1978 House Status") prepared by Epsilon Associates, submitted herewith. Accordingly, the Emergency Project is within the scope of work that "shall be permitted" under 310 CMR 10.30 The pre-1978 residential structures cannot be protected without protecting Baxter Road, and the public health and safety will thereby be directly addressed. Moreover, the beach below the bluff and specific means of access to it over the bluff are available to the public and the safety of the public use of these resources, including the stability of the bluff, is directly at stake. Finally, it is a mistake to suggest that because individual homes within a community are privately owned, the physical destruction of that community is not a threat to the public health and safety, just as it would be a mistake to say that the destruction of a community by fire, or storm or other natural disaster is not a public health and safety issue just because the individual structures destroyed may have been privately owned.

The Emergency Project is the minimum necessary to abate the emergency.

The proposed Emergency Project is necessary to abate the emergency, and is the minimum project necessary to abate the emergency both in terms of geographic scope and design. Other proposed mechanisms for protection of the Bluff have been mooted , which has provided an opportunity to vet alternatives. They range from the rock revetment which is the subject of SBPF's NOI DEP File No. 048-2581 to substituting less sturdy materials for the geotextiles which are proposed for the Emergency Project. As is shown in the letter from Milone & MacBroom dated November 1, 2013, submitted herewith, the use of jute bags in lieu of geotextiles will be inadequate to protect the roadway and utility infrastructure or the residences along Baxter Road. The principal problem is that, as was seen over time and especially in the course of last year, when multi-day storms or successive storms come close together there will not be adequate time to restore to the jute bags the sand which they give up during the earlier of the storms. The jute bags will fail (as shown on the photographs submitted herewith) and the bluff will be left unprotected during severe storms, multi-day storms, or successive storms, at the point when protection is most needed. Jute is inadequate for properties that no longer have enough room to survive a likely loss of the bluff, as here. The geotextiles proposed solved this problem and provide protection during the course of successive storms. The geotextile installation proposed for the Emergency Project is substantially different from previous geotextile installations permitted on Nantucket, as detailed in the memo from Epsilon Associates dated November 26, 2013, submitted herewith, and is not expected to generate significant debris, as presented in the correspondence from Dr. Michael Bruno dated November 25, 2013, submitted herewith.

In terms of the geographical scope of the Emergency Project, as the plans establish it is no wider that needed to protect the area identified as at imminent risk, and properly protect the flanks of the project and adjacent areas.

SBPF is an appropriate applicant for emergency certification.

The Commission found that the Initial Request did not comply with what it characterized as the criterion that a public agency order or perform the project. There is no such requirement. Nowhere in 310 CMR 10.06 does it say that a private party faced with immanent destruction of property that otherwise meets the criteria of that section cannot seek permission to perform emergency work or, if granted, perform that work. The regulation does, of course, tell a requesting party that it shall identify any public agency that is going to do the work or which has ordered that the work be done. But there is nothing in that language which would exclude a private party facing immanent destruction of property from filing to protect it. And indeed, DEP (then "DEQE") has taken the position, and relied upon it in the courts of the Commonwealth, that private persons can, in such situations, petition under 310 CMR § 10.06. In Wilson v Commonwealth, 31 Mass. App. Ct.757 (1992), owners of shorefront property in Chatham who had lost their homes when, as result of major storm activity in 1987, their homes were threatened. Without reciting the elaborate history, after litigation was underway, the homeowners in question filed a new NOI, and the conservation commission permitted them to build a revetment. DEP reversed that decision and some months later the homes were lost to the sea. In its reversal, DEP "advised the owners that they could still petition for emergency certification, see 310 Code Mass. Regs. § 10.06 (1987) to use nonpermanent structures (such as sand-filled tubes) to secure their property." Id. at p. 761, n.9. The court dismissed certain of the homeowners claims and allowed a regulatory takings claim to go forward.

In addition, we note that in the particular context of 310 CMR § 10.30, which provides that coastal engineering structures (which meet the identified criteria) 'shall be permitted' where necessary to protect pre-1978 structures such as are at risk here, to require private persons to suffer the complete destruction of the residences and physical loss of the earth that comprises their lots to the sea before granting a remedy runs afoul of basic principles of due process applicable under the state and federal constitutions. This is plainly an instance in which post-deprivation remedies are inadequate, and the owners are entitled to a hearing on the merits of their claims before their property is lost because of the time periods inherent in the NOI and administrative review processes.

Additional considerations.

Although we understand that emergency certification under the Nantucket Wetlands By-law is not within the review jurisdiction of DEP, the Agency could well be concerned from a practical point of view about the status of local certification. The local procedure, which appears at Chapter 136 section 5 of the Nantucket Town Code, mirrors 310 CMR § 10.06 in pertinent respects. The local language which would govern whether public agency action or direction is required mimics the language of the regulation and is no broader than that. The term 'emergency' is defined to incorporate a test of whether to be performed effectively the work can

await compliance with the notice requirements and appeal period associated with the filing of a notice of intent. The appeal period for review of a decision under the local certification period is governed by G.L. 259 section 4, and is 60 days; the procedure in such an action is governed by Superior Court Standing Order 1-96 and which provides that the Commission would have 90 days to file the record, and a 60 day briefing schedule thereafter, before the matter is ripe for hearing. This could not be accomplished in time to avert imminent danger during the current season.

We note that although both the local procedure and that described in 310 CMR § 10.06, contemplate subsequent filing of an NOI, and therefore the evaluation is for that subsequent proceeding, SBPF submitted to the Commission (and submits herewith) a memo from Epsilon Associates dated November 26, 2013 presenting an analysis showing satisfaction of the relevant standards. But we also note that, although SBPF has in this request and in its previous projects, conformed to local Nantucket wetlands requirements, it has reserved its right to rely on the absence of municipal jurisdiction to regulate or impose more stringent requirements on work within the scope of the pre-1978 structures provisions of 310 CMR § 10.30. That section, uniquely among all the provisions of the Wetlands Protection Act Regulations, does not provide a floor above which municipalities may impose more stringent standards. That section appears to be the sole instance in the regulations in which it is stated that work (which meets the relevant criteria) "shall be permitted". That section, unlike the rest of the regulatory scheme, under principles of Home Rule and the analysis of Lovequist v. Conservation Commission of Dennis, 379 Mass. 7 (1979), DeGrace v. Conservation Commission of Harwich, 31 Mass. App. Ct. 132 (1991), and their progeny, occupies the field, and leaves no room for municipalities to strike a different balance between the competing interests at stake.

Finally, we note that the proposed Emergency Project can, under anticipated conditions, be completed in thirty days, and SBPF has an agreement in place with an experienced contractor to perform the work as soon as authorization is received.

IV. CONCLUSION

On the basis of the foregoing, SBPF respectfully requests that the DEP issue an emergency certification and grant permission for the Emergency Project.

Respectfully submitted,

David S. Weiss
Attorney for Siasconset Beach Preservation Fund, Inc.

DSW:vmm

Enclosures

- Request for Certification of Emergency: Sconset Bluff – Baxter Road of November 26, 2013
- Emergency Project Plans
- Memo from Epsilon Associates dated November 1, 2013
- Memo from Epsilon Associates dated November 25, 2013
- Two Memos from Epsilon Associates dated November 26, 2013
- Figure 11 (titled "Pre-1978 House Status") prepared by Epsilon Associates
- Photographs of Jute Terraces
- Letters from Milone & MacBroom dated October 25, 2013, November 1, 2013, November 5, 2013, November 12, 2013 and November 19, 2013
- Memorandum of Understanding between the Town of Nantucket and Sconset Beach Preservation Fund, Inc. dated July 5, 2013
- Amendment to the Memorandum of Understanding dated October 9, 2013
- Emergency Management and Marine Safety Plan of November 20, 2013
- Correspondence from Dr. Michael Bruno dated November 25, 2013
- Dr. Bruno's Resume

cc: Mr. David Johnston (Deputy Regional Director DEP SERO)
Ms. Elizabeth Kouloheras (Wetlands Section Chief DEP SERO)
Mr. James Mahala (Coastal Engineering DEP SERO)
Mr. Jeffrey Carlson (Conservation Agent)
Ms. Libby Gibson (Town Manager)
Ms. Kara Buzanoski (Director of DPW)
Mr. Robert DeCosta (Board of Selectmen)
SBPF
Messrs. A Reade and S. Cohen, Esqs.
Epsilon Associates

goulston&storrs
counsellors at law

David S. Weiss
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(617) 574-6400 (tel)
(617) 574-7648 (fax)

November 26, 2013

Mr. Ernie Steinauer, Chair
Nantucket Conservation Commission
Town of Nantucket
16 Broad Street
Nantucket, MA 02554

Re: Request for Certification of Emergency: Sconset Bluff – Baxter Road

Dear Chairman Steinauer:

This firm, together with Messrs. Reade and Cohen of Reade, Gullicksen, Hanley, Gifford & Cohen, LLP, is counsel to Siasconset Beach Preservation Fund, Inc. ("SBPF"). This letter constitutes a request for permission to perform an emergency project, and for certification that the project is an emergency under 310 CMR 10.06 and §136-5 of the Nantucket Town Code.

The work that is proposed (the "Emergency Project") is required in response to the ongoing erosion of Sconset Bluff (sometimes called "Siasconset Bluff") which has reached the point of posing an immediate threat in the current storm season to Baxter Road, a public way, and associated utilities as well as the homes seaward and landward of Baxter Road in the "Emergency Project Area" shown on the project plans submitted herewith. Because significant analysis has been done in connection with two distinct notices of intent (Baxter Road Temporary Stabilization Project, DEP File No. 048-2610 and Baxter Road and Sconset Bluff Storm Damage Prevention Project, DEP File No. 048-2581), both of which are presently pending before the Commission, we are able to present more complete information than is sometimes the case with respect to a request for emergency certification.

The Emergency Project is proposed for 91-105 Baxter Road in accordance with the emergency criteria set forth in the memo from Epsilon Associates dated November 25, 2013, submitted herewith. Other than the proposed reduction in length of coverage, the Emergency Project is similar to the Baxter Road Temporary Stabilization Project (DEP File No. 048-2610) for 85-107A Baxter Road described in detail in the letters and plans submitted during the NOI process by Milone & MacBroom dated October 25, 2013, November 1, 2013, November 5, 2013, and November 19, 2013, submitted herewith. In overview, the Emergency Project involves the installation of four 45-foot circumference geotextile tubes, which are approximately 19 wide, 6.5 feet tall, and 100-200 feet long. The bottom tube will be buried in the beach to elevation 0.0 MLW and the top tube will be set at elevation 26.0 MLW. A scour apron and four-foot-diameter anchor tube are included, extending five feet seaward of the lowest geotextile tube

at elevation 0.0 MLW. The four geotubes will overlap by approximately 1/3 of their circumference, yielding an effective slope of 2 Horizontal:1 Vertical. There will be shorter return tubes on the return ends to minimize flanking. Jute fabric will be placed on the upper bank face; and vegetation will be planted in the following spring. The Project will be installed at the toe of the bank parallel to Baxter Road from 91-105 Baxter Road (only the narrowest portion of 105 Baxter Road will be included), for an approximate length of just under 900 feet. The geotextile tubes will be covered with sand. The sand cover will be maintained and sacrificial sand will be added for protection and to ensure a minimum volume (equivalent to the annual volume contributed by the eroding coastal bank) is contributed annually. The Project is readily removable. Failure criteria and information related to protocols for and cost of removal are set forth in the October 25, 2013, November 5, 2013, and November 19, 2013 letters from Milone & MacBroom, submitted herewith.

There can be no doubt that because of the conditions giving rise to the emergency, to be performed effectively, the Emergency Project cannot await compliance with the notice requirements and appeal period associated with the filing of a notice of intent. As is established by the memos from Epsilon Associates dated November 1, 2013 and November 25, 2013 submitted herewith, the average long-term rate of retreat of the Bluff from 85-107A Baxter Road has been 4.6 feet/year, though erosion greater than or less than this rate can occur in a given year. Indeed, last year, in particular locations, the edge of the Bluff retreated landward as much as 40 feet, as presented in the memo from Epsilon Associates dated November 25, 2013. The Town of Nantucket had already concluded that "certain private homes located on or near Siasconset Bluff and Baxter Road, a public way, may be imminently threatened with damage and/or loss and destruction due to severe erosion of the bluff which has intensified since the winter of 2012-2013... [and] an emergency exists that threatens public roads and other assets from imminent destruction" (Memorandum of Understanding between the Town of Nantucket and Sconset Beach Preservation Fund, Inc. entered into July 5, 2013, a copy of which is submitted herewith. Indeed, on October 9, 2013, in an amendment to the Memorandum of Understanding, the Town of Nantucket identified "an immediate need for emergency measures to protect Baxter Road and the associated utilities temporarily, in order to maintain vehicular access and utility service to the residential properties on Baxter Road... and there is an emergency need for an emergency response action plan outlining how the Town will provide emergency vehicular access, water supply and sanitary services to the residences at the north end of Baxter Road in the event of a failure of the roadway and that there is also a need for long-term planning for the potential eventual loss of Baxter Road..." (A copy of the Amendment to the Memorandum of Understanding is submitted herewith.) On November 8, 2013, the Town's consultant Milone & MacBroom, Inc. reported to the Director of the Department of Public Works after reviewing site conditions and conferring with Haley & Aldrich (which Milone & MacBroom identify as a well-respected geotechnical engineering firm that has been retained by SBPF) that "[t]he town can maintain travel on Baxter Road until such time as the top of the bluff is 25 feet or less from the edge of pavement. When the top of the bluff is within 25 feet of the pavement edge, the road should be closed to traffic until a detailed assessment can be completed by a geotechnical engineer." And, on November 20, 2013, the Town adopted an "Emergency Management and Marine Safety" Plan, a copy of which is submitted herewith. Nantucket's Wanacommet Water

Company is mobilizing to move the water line from the east side of Baxter Road to the west side, at considerable expense, because it has determined that the east side is in immediate danger.

An analysis demonstrating the imminent risk to the roadway, utility and homes within the Emergency Project area is included in the memo from Epsilon Associates dated November 25, 2013 submitted herewith. As that analysis demonstrates, these assets are at risk of imminent loss in the current storm season. The proposed Emergency Project can, under anticipated conditions, be completed in thirty days, and SBPF as an agreement with an experienced contractor to perform the work as soon as authorization is received.

The proposed Emergency Project will simultaneously have two effects. It will protect Baxter Road, a public way, and the associated utilities, some or all of which constitute pre-1978 structures or infrastructure, and the residences on Baxter Road in the Emergency Project area, both seaward and landward of the road, all of which were constructed prior to 1978. Apart from direct danger to the structures themselves, loss of access to the residences by reason of the closure or failure of Baxter Road constitutes imminent danger to those pre-1978 residences. The pre-1978 status of the homes in the Emergency Project area is presented on Figure 11 (titled "Pre-1978 House Status") prepared by Epsilon Associates, submitted herewith. Accordingly, the Emergency Project is within the scope of work that "shall be permitted" under 310 CMR 10.30 and within the scope of parallel provisions of the Nantucket Wetlands Regulations.[1]

The proposed Emergency Project is necessary to abate the emergency. Other proposed mechanisms for protection of the Bluff have been mooted. They range from the rock revetment which is the subject of SBPF's NOI DEP File No. 048-2581 to substituting less sturdy materials for the geotextiles which are proposed for the Emergency Project. As is shown in the letter from Milone & MacBroom dated November 1, 2013, submitted herewith, the use of jute bags in lieu of geotextiles will be inadequate to protect the roadway and utility infrastructure or the residences along Baxter Road. The principal problem is that, as was seen over time and especially in the course of last year, when multi-day storms or successive storms come close together there will not be adequate time to restore to the jute bags the sand which they give up during the earlier of the storms. The jute bags will fail (as shown on the photographs submitted herewith) and the bluff will be left unprotected during severe storms, multi-day storms, or successive storms, at the point when protection is most needed. Jute is inadequate for properties that no longer have enough room to survive a likely loss of the bluff, as here. The geotextiles proposed solved this problem and provide protection during the course of successive storms. The geotextile installation proposed for the Emergency Project is substantially different from

[1] We note the "20% change" language incorporated into certain aspects of the portions of the Nantucket Wetlands Regulations which address pre-1978 structures. That language does not of course apply to infrastructure. Nothing in this request is, or is intended to be, a waiver, admission, or acknowledgment adversely affecting any claim or argument available to SBPF that a municipality has jurisdiction or authority to impose more stringent limitations on projects that "shall be permitted" under the Wetlands Protection Act Regulations than those provided for in those Regulations. SBPF expressly reserves all of its rights with respect thereto.

previous geotextile installations permitted on Nantucket, as detailed in the memo from Epsilon Associates dated November 26, 2013, submitted herewith, and is not expected to generate significant debris, as presented in the correspondence from Dr. Michael Bruno dated November 25, 2013, submitted herewith.

As a result of the substantial analysis that has been undertaken in connection with the pending Notices of Intent, sufficient information has been developed so that the proposed Emergency Project minimizes, mitigates, and provides monitoring protocols for any perceived impacts on third-parties, as is more fully set forth in the memos from Milone & MacBroom dated November 1, 2013, November 12, 2013, and November 19, 2013; the memo from Epsilon Associates dated November 1, 2013; and the correspondence from Dr. Michael Bruno dated November 25, 2013, submitted herewith. The harm that will result from failing to certify that emergency and permit the Emergency Project to go forward together with the potential for removal of the Proposed Project should that prove necessary, far outweighs any risks thought to be associated with the proposed work.

We note that the Regulations contemplate action by the Commission within twenty-four hours of a request for emergency certification (310 CMR 10.6(5)), and in the event the Commission does not act within that period of time the request may be brought to the Department of Environmental Protection for action by it in lieu of the Commission. The Regulations also contemplate that an NOI is to be filed after any emergency certification, in the course of which compliance with performance standards will be evaluated. Although that evaluation is for that subsequent proceeding, submitted herewith is a second memo from Epsilon Associates dated November 26, 2013 presenting an analysis showing satisfaction of the relevant standards.

We are prepared to work with you to facilitate a response to this request as expeditiously as possible.

Respectfully submitted,

David S. Weiss

DSW:vmm
Enclosures

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cc: Mr. Jeffrey Carlson (Conservation Agent)
Ms. Libby Gibson (Town Manager)
Ms. Kara Buzanoski (Director of DPW)
Mr. Robert DeCosta (Board of Selectmen)
Mr. David Johnston (Deputy Regional Director DEP SERO)

SBPF
Messrs. A Reade and S. Cohen, Esqs.
Epsilon Associates

GSDOCS\2287039.2

Deepwater Significant Wave Height and Peak Period:

28.8 ft and 15.2 seconds: Determined from statistical analysis of USACE WIS Hindcast data.

Toe of Bluff:

+8.0 ft MLW (average elevation along bank toe in study area) per LIDAR survey conducted in July 2013.

Wave Setup:

Wave setup is the increase in mean water level due to the presence of waves. Wave setup was calculated according to the direct integration method (DIM) prescribed by FEMA. Setup = 3.9 ft.

Design Water Depth:

100-year design water depth at the toe of the bluff equals stillwater level plus setup minus the mudline at the toe of the bluff: 10.2 ft + 3.9 ft – 8.0 ft = 6.1 ft.

Wave Height:

The deepwater significant wave height will break as it approaches shore. The wave impacting the bluff and geotube structure will be limited by the depth at the toe calculated above. Standard breaker index of 0.78 (per USACE) times the water depth provides a maximum breaking wave height of 4.8 ft, which is rounded to 5 feet.

Wave Crest Elevation:

Breaking wave crest elevation is equal to the stillwater level + setup + 0.7(H):

10.2 ft + 3.9 ft + (0.7*4.8 ft) = 17.5 ft MLW

Wave Runup:

Wave runup on the stacked geotube system was calculated in accordance with USACE Coastal Engineering Manual (CEM) methodology for berm configuration based on the proposed geometry (Equation VI-5-7). Wave runup was calculated to be 10.1 ft.

Crest Elevation:

Minimum required crest elevation is SWL + Setup + Runup: 10.2 ft + 3.9 ft + 10.1 ft = 24.2 ft MLW. Standard geotube dimensions put the top elevation at +26 ft MLW.

Scour:

The beach at the toe of the coastal bank varies in elevation over the course of an average year. The beach level at the toe of the coastal bank on the 2013 LIDAR survey was at +8 ft MLW and during an average winter; Northeaster storms can lower the beach level up to 3 to 5 ft below that level. It is critical that the geotube system be designed for potential scour. As confirmed by J. Richard Weggel, Ph.D., P.E., D.CE, Professor Emeritus Department of Civil, Architectural & Environmental Engineering at Drexel University below, wave-induced scour is the leading cause of geotube failure:

"Wave forces also act on the tube, but they generally act to push the tube shoreward while gravity acts to displace the tube seaward. While much attention is paid to wave forces, direct wave action rarely results in failure, rather it is wave-induced scour that leads to failure. Observations suggest that tube displacement is most often seaward indicating that are not wave forces, per se, that displace the tubes. Rather, the tubes are undermined when the beach in front scours and the scour hole propagates landward under the tube generating its failure. That is, the beach slope steepens locally as scour progresses beneath the tube until the tube falls seaward into the scour hole." J. Richard Weggel

USACE recommends that a scour depth of 1.5 times the wave height be considered for areas with moderate to severe scour potential such as the case with Sconset Beach. The 100-year breaking wave height at the structure toe is approximately 5 ft so a scour depth of at least 7.5 ft should be considered. Rounding this to 8 feet brings the bottom of the geotube to the 0.0 ft MLW elevation.

Michael S. Bruno, ScD, PE, F. ASCE

Charles V. Schaefer School of Engineering and Science
Stevens Institute of Technology
Hoboken, NJ 07030
(201)216-5338 mbruno@stevens.edu

Professional Experience

Stevens Institute of Technology *August 1989 to present*

Dean, School of Engineering and Science (2007 to present)
Responsible for strategic planning, operations, budget, faculty hiring and mentoring, external relations, assessment and accreditation.

Director, DHS National Center of Excellence in Port Security (2008 to present)

Director, Center for Maritime Systems and the Davidson Laboratory (1989 to 2007)
Responsible for strategic planning, technical direction, budgeting, business development, human resources and quality assurance; annual budget of approximately $10 million. Scientific staff of more than 50.

Professor, Department of Civil, Environmental and Ocean Engineering (1989 to present)
Director, Stevens Scholars Program; Coordinator, Ocean Engineering Program,

Director, New Jersey Coastal Protection Technical Assistance Service (1992 to 2007)
Responsible for all aspects of the Service, which provides technical advice to State and local government officials on matters related to shore protection, as well as public outreach and education pertaining to coastal processes, weather/climate issues, and water quality issues.

New Jersey Institute of Technology *August 1986 to July 1989*
Assistant Professor

Massachusetts Institute of Technology *June 1982 to July 1986*
Cambridge, Massachusetts
Research Assistant

State of New Jersey *August 1981 to June 1982*
Department of Environmental Protection
Principal Engineer

Education

Massachusetts Institute of Technology/ Woods Hole Oceanographic Institution *1982 - 1986*
Cambridge, Massachusetts
Doctor of Science - 1986 - Oceanographic Engineering

University of California at Berkeley *1980 - 1981*
Berkeley, California
Master of Science - 1981 – Civil Engineering

New Jersey Institute of Technology *1976 - 1980*
Newark, New Jersey
Bachelor of Science - 1980 – Civil Engineering

Professional Activities/Accomplishments

Member, **Naval Research Advisory Committee** (2009-present)

Member, **Ocean Research Advisory Panel** (2010-present)

Chair, **Marine Board of the National Research Council** (2005-2012)

Visiting Professor, Dept of Mechanical Engineering, **University of London** (2004-present)

Secretary General, Pan American Federation of Coastal and Ocean Engineers (1990-present)

Editor-in-Chief, Journal of Marine Environmental Engineering (1993-present)

Chair, Workshop Committee, **Group on Earth Observations** Coastal Zone Community of Practice, "Observing System Support for Decision-Making in the Coastal Zone: Managing and Mitigating the Impacts of Human Activities and Natural Hazards in the Coastal Zone" (2006-present)

Member, Board of Directors, **Mid-Atlantic Regional Association Coastal Ocean Observing System** (2008-present)

Member, **Transportation Research Board** Committee on Marine Environment (2006-2010)

Member, **American Meteorological Society** Committee on Coastal Environment (2007–2012)

Member, **Defense Science Board** Summer Study on Homeland Security (2003-2004)

Member, Board of Trustees, New Jersey Marine Sciences Consortium (2006–2012)

Member, **National Research Council** Committee on Oil Spill Countermeasures (1995-1997)

Registrations

Registered Professional Engineer in State of New Jersey

SCUBA Instructor (PADI and NAUI)

Awards

Denny Medal, 2007, The Institute of Marine Engineering, Science & Technology, London.
Fellow, ASCE, 2006
President's Leadership Award, 2006, Stevens Institute of Technology
Fulbright Scholar, 1996 (appointment at Aristotle University of Thessaloniki, Greece)
Office of Naval Research Young Investigator Award, 1991
Outstanding Service Award, American Society of Civil Engineers, 1988
Fellow, Explorers Club, 2002
Member, Cosmos Club, 2003
James Robbins Award for excellence in teaching, N.J. Inst. of Tech. 1986 – 1987
Honorary Member, Mexican Academy of Sciences

Patents

M. Bruno, A. Sutin, 5 others, "Passive Acoustic Underwater Intruder Detection System", April, 2012.

Publications

Books

1. Wilkens, R., T. Gemelas, and M. Bruno (co-editors). 2011. "Maritime Domain Awareness and Resilience Applications for Homeland Security'. J. Marine Technology Society, Vol. 45, No 3.

2. Bruno, M.S. and R.I. Hires, 2006. "Oceanography", Encyclopedia of Environmental Science and Engineering, Fifth Edition, 790-801, Taylor and Francis.

3. Bruno, M.S. (2005). "Physical Models", in Encyclopedia of Coastal Science. M. L. Schwartz ed., 769-771. Springer.

4. Bruno, M.S. 2001. "Physical Modeling", in Encyclopedia of Coastal Science, M. Schwartz, ed., Kluwer.

5. Englehardt, R. and Bruno, M.S. (co-editors). 1998. Oil Spill Countermeasures. International Union of Pure and Applied Chemistry, Research Triangle Park, North Carolina.

6. Bruno, M.S., 1992. "Oceanography", Encyclopedia of Environmental Sciences and Engineering, Third Edition, 801-812, Gordon and Breach.

Refereed Publications

1. Rogowski, P., R. Stolkin, and M. Bruno. 2012. "Optimization of the Spatial Distribution of Oceanographic Sensors in a Highly Variable Estuarine Environment", J. Marine Environmental Engrg. Vol. 9, No 3, 211-224.

2. M. S. Bruno, A. Sutin, K. W. Chung, A. Sedunov, N. Sedunov, H. Salloum, H. Graber, and P. Mallas. 2011. "Satellite Imaging and Passive Acoustics in Layered Approach for Small Boat Detection and Classification", J. Marine Technology Society, Vol. 45, No 3, 77-87.

3. K.W. Chung, A. Sutin, A. Sedunov, and M. Bruno. 2011. "DEMON Acoustic Ship Signature Measurements in an Urban Harbor," Advances in Acoustics and Vibration, vol. 2011, 13 pages.

4. K.W. Chung, A. Sutin, A. Sedunov, and M. Bruno. 2011. "Cross-correlation method for measuring ship acoustic signatures", Proceedings, 160th Meeting Acoustical Society of America, 11, 1-12.

5. R. Messaros and M.S. Bruno. 2011. "A Laboratory Investigation of Bedform Geometry under Regular and Irregular Surface Gravity Waves", Journal of Coastal Research.

6. A. Sutin, B. Bunin, A. Sedunov, N. Sedunov, M. Tsionsky, M. Bruno. 2010. "Stevens Passive Acoustic System for Underwater Surveillance", Proceedings, Waterside Security Conference.

7. M.S. Bruno, K.W. Chung, H. Graber, A. Sutin, P. Mallas, H. Salloum, A. Sedunov, N. Sedunov. 2010. "Concurrent Use of Satellite Imaging and Passive Acoustics for Maritime Domain Awareness", Proceedings, Waterside Security Conference.

8. B. Bunin, A. Sutin, M. Bruno. 2007. "Maritime Security Laboratory for Maritime Security Research", Optics and Photonics in Global Homeland Security, Proc, SPIE, Vol 6540, 1-8.

9. Bruno, M.S., A.F. Blumberg and T.O. Herrington. 2006. The Urban Ocean Observatory - Coastal Ocean Observations and Forecasting in the New York Bight. Journal of Marine Science and Environment, No C4, IMarEST, 1-9.

10. Roarty, H and M.S. Bruno. 2006. "Laboratory Measurements of Bed Load Sediment Transport Dynamics", *ASCE Journal of Waterway, Port, Coastal, & Ocean Engineering.* Vol 132, No 3, 199-211.

11. Fan, S., A F. Blumberg, M. S. Bruno, D. Kruger, and B. Fullerton. 2006. The Skill of an Urban Ocean Forecast System, Estuarine and Coastal Modeling, ASCE, 720- 731.

12. Bruno, M.S., B. J. Fullerton, R. Datla, and P. Rogowski. (2004). "Field and Laboratory Investigation of High-Speed Ferry Wake Impacts in New York Harbor", High Speed Performance Vehicles, 277-286. Springer.

13. Bruno, M.S. and A.F. Blumberg. 2004. "An Ocean Observatory for the Maritime Community – Real-time Assessments and Forecasts of the New York Harbor Marine Environment", Sea Technology, August. Compass Publications.

14. Rankin, K.L., M.S. Bruno, and T.O. Herrington. (2004). "Nearshore Currents and Sediment Transport Measured at Notched Groins", *J. Coastal Res., No 33, 237-254.*

15. Rankin, K.L., T.O. Herrington, M.S. Bruno, P. B. Burke, and A.M. Pence. (2004). "Cross-shore Distribution of Alongshore Currents and Sediment Fluxes in the Vicinity of Notched Groins", *J. Coastal Res., No 33, 255-268.*

16. Bruno, M.S., K.L. Rankin, T.O. Herrington, and N. Kraus. 2002. "Re-engineering Existing Coastal Structures: Guidelines and Impacts", *Coastlines, Structures and Breakwaters*, Institute of Civil Engineers, London.

17. Nordstrom, K.F., N.L. Jackson, M.S. Bruno, and H.A. deButts. 2001. "Municipal Initiatives for Managing Dunes in Coastal Residential Areas", *Geomorphology.*

18. Bruno, M.S., O. G. Nwogu, K.L. Rankin, and T. O. Herrington, 2001. "Real-Time Coastal Monitoring and Forecasting System : Preliminary Results", *International Conference on Coastal Engineering*, Vol 1, 283-291, ASCE.

19. Herrington, T.O., M S. Bruno, and K. L. Rankin. 2000. "The New Jersey Coastal Monitoring Network: A Real-Time Coastal Observation System", *Journal of Marine Environmental Engineering*, 6, 1, 69-82, Gordon and Breach.

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22. Roarty, H. J. and M.S. Bruno, 1999. "Measurement of Suspended Sediment Concentration in the Laboratory through Photographic Techniques", *Coastal Sediments*, Volume 1, 163-178, ASCE.

23. Cadmus, K. A. and M.S. Bruno, 1999. "Influence of Tidal Water Surface Fluctuations on Beach Profile Evolution", *Coastal Sediments*, Volume 1, 437-446, ASCE.

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25. Bruno, M.S., M. Yavary, and T.O. Herrington, 1998. "The Influence of a Stabilized Inlet on Adjacent Shorelines: Manasquan, New Jersey", *Shore & Beach*, Vol. 66, No. 2, 19-25.

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32. Bruno, M.S., T.O. Herrington, and K.L. Rankin, 1996. "The Use of Artificial Reefs in Erosion Control: Results of the New Jersey Pilot Reef Project", *Proceedings, Ninth Conference on Beach Preservation Technology*, St. Petersburg, Fla. January 25, 1996, 239-254.

33. Waters, J.K. and M.S. Bruno, 1995. "Internal Wave Generation by Ice Floes Moving in Stratified Water: Results from a Laboratory Study", *J. Geophysical Research*, 100, 13635-13639.

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41. Martin, J.P., J.R. Weggel, M.S. Bruno, and S. Halsey, 1991. "The Use of High Fly Ash Concrete for Marine Structures", *Trans. American Coal Ash Association*, Washington,DC, 54, 1-15.

42. Bruno, M.S., 1991. "A Note on the Determination of Sea Ice Concentration", *J. Offshore Mech. and Arctic Engineering.*, 113, 88-90, ASME.

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Other Major Publications

1. Lindstrom, E., R. Spinrad, Z. Willis, D. Martin, D. Hernandez, C. Wilson, H. Selm, M. Bruno, D. Legler, B. Hauptman. 2013. U.S. Integrated Ocean Observing System (IOOS) 2012 Summit Report. 96 pp.

2. Bruno, M.S. et. al. 2012. Marine Corps Capabilities for Countering Precision Weapon Threats. Naval Research Advisory Committee Report. 52 pp.

3. Bruno, M.S. 2011. Center for Secure and Resilient Maritime Commerce, Year 3 Report. Department of Homeland Security, Office of University Programs, Science and Technology Directorate. 221 pp.

4. Bruno, M.S. 2010. Center for Secure and Resilient Maritime Commerce, Year 2 Report. Department of Homeland Security, Office of University Programs, Science and Technology Directorate. 173 pp.

5. Sommerer, J. et. al. 2010. Status and Future of the Naval R&D Establishment. Naval Research Advisory Committee Report. 139 pp.

6. Bruno, M.S. 2009. Center for Secure and Resilient Maritime Commerce, Year 1 Report. Department of Homeland Security, Office of University Programs, Science and Technology Directorate. 128 pp.

7. Rankin, K.L. and M.S. Bruno. 2005. Wave Transformation and Nearshore Currents in the Vicinity of a Wide-Crested Submerged Reef. Proceedings, National Conference on Beach Preservation Technology, Destin, Florida.

8. Grelg, A., M.S. Bruno and J.L. Waters. 2004. "Comparison of Naval Architecture Programs at U.K. and U.S. Institutions. Proceedings, ASEE Conference, June 21, 2004.

9. Bruno, M.S., Fullerton, B. and R. Datla. 2004. "Results of the New York Harbor High-Speed Ferry Wake Project." Proceedings, National Harbor Operations Committee Conference, Ft. Lauderdale, February 24, 2004.

10. Bruno, M.S., Herrington, T.O., and K.L. Rankin. 2001. Coastal Engineering Analysis of the Atlantic Ocean Shoreline of the Village of Ocean Beach, County of Suffolk, New York, prepared for the Village of Ocean Beach, N.Y.

11. Kaluarachchi, I.D., M.S. Bruno, Q. Ahsan, A.F. Blumberg, and H. Li. 2003. "Estimating the Volume and Salt Fluxes through the Arthur Kill and the Kill van Kull." World Water & Environmental Resources Congress, ASCE.

12. Bruno, M.S. 2003. "The New York Harbor Observation System." Proceedings, National Harbor Operations Committee Conference, New York, April 7, 2003.

13. Bruno, M.S., B. Fullerton, and R. Datla. 2002. "Ferry Wake Wash in New York Harbor." Report prepared for New Jersey Department of Transportation. Report SIT-DL-02-9-2812, October, 2002.

14. Herrington, T.O., K.L. Rankin, and M.S. Bruno. 2002. "The New Jersey Coastal Monitoring Network." New Jersey Sea Grant Extension Program Bulletin, No. 15.

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16. Allee, King, Rosen & Fleming Inc., Moffatt & Nichol, Engineers, and M.S. Bruno. 2000. Town of Southampton Atlantic Ocean Shoreline, Draft Generic Environmental Impact Statement, prepared for Town of Southampton, New York.

17. Bruno, M.S., Herrington, T.O. and K.L. Rankin. 1999. Coastal Engineering Analysis of the Shoreline of the Village of Ocean Beach, Fire Island, New York, prepared for the Village of Ocean Beach, N.Y.

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Bruno, M.S., 1998. "Technological Improvements and Beachfill Design : Coastal Engineering in the Information Age", *Proceedings, American Littoral Society Meeting*, Sandy Hook, New Jersey.

21. Herrington, T.O., M.S. Bruno, and K.E. Ketteridge, 1997. "Monitoring Study of the Beachsaver Reef at Cape May Point, New Jersey", Report SIT-DL-96-9-2751, submitted to the Borough of Cape May Point, N.J., Stevens Institute of Technology.

22. Bruno, M.S. 1996. "Ocean Engineering Research Activities in the Country of Greece", report prepared for the Office of Naval Research, Europe, London.

23. Bruno, M.S. 1996. "Field Investigation and Sediment Transport Analysis of the Manasquan, New Jersey Shoreline", Report SIT-DL-9-96-2740, submitted to U.S. Army Corps of Engineers, Stevens Institute of Technology.

24. Bruno, M.S., T.O. Herrington, K.L. Rankin, and K.E. Ketteridge, 1996. "Monitoring Study of the Beachsaver Reef at Avalon, New Jersey, Report SIT-DL-9-96-2739, submitted to the Borough of Avalon, N.J., Stevens Institute of Technology.

25. Bruno, M.S. 1996. "Laboratory Study of the Dispersion Characteristics of Orimulsion", Report SIT-DL-95-9-2734, submitted to Roy F. Weston, Inc., Stevens Institute of Technology.

26. Bruno, M.S. 1995. "Future Prospects for Erosion Control Technology", Marine and Estuarine Shallow Water Science and Management Conference, abstract published April 3, 1995, USEPA.

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29. Bruno, M.S. and R. Datla, 1995. "Scale Model Test of the Demi-Tek Rotating Reef Erosion Control Device", Report SIT-DL-95-9-2720, submitted to Demi-Tek, Inc., Stevens Institute of Technology.

30. Bruno, M.S. 1994. "Results of Shoreline Monitoring Program, Manasquan, New Jersey", Report SIT-DL-95-9-2717, submitted to the Borough of Manasquan, New Jersey, Stevens Institute of Technology.

31. Bruno, M.S., 1994. "Physical Model Study of MOTO Wave Energy Extraction System", Report SIT-DL-94-9-2710, submitted to Greenworld Group, New York, N.Y., Stevens Institute of Technology.

32. Bruno, M.S. and T.O. Herrington, 1994, "Monitoring Study of the Beachsaver Reef at Avalon, New Jersey", Report SIT-DL-94-9-2709, submitted to the Borough of Avalon, New Jersey, Stevens Institute of Technology.

33. Waters, J.K., Bruno, M.S., Herrington, T.O., and K.L. Rankin, 1993. "A Laboratory Investigation of Sea Ice Dynamics in a Stratified Waterbody", Report SIT-DL-93-9-2695, submitted to Office of Naval Research, Stevens Institute of Technology.

34. Bruno, M.S., 1992. "Three-Dimensional Modeling of Pollutant Transport in Surface Waters", Report SIT-DL-92-9-2680, submitted to U.S. Geological Survey, Stevens Institute of Technology.

35. Bruno, M.S., T.G. McKee, and W.M. Clark, 1992. "Laboratory Study of an Artificial Reef Beach Erosion Mitigation Device", Report SIT-DL-92-9-2676, Stevens Institute of Technology.

36. Bruno, M.S., 1992. "Beach Erosion and Retaining Wall Deterioration at Spring Lake and Belmar, New Jersey, Report SIT-DL-91-11-2667, Stevens Institute of Technology.

37. Bruno, M.S., 1991. "Modeling-State of the Art", in Proceedings, Southern New Jersey Coastal Modeling Workshop, U.S. Army Corps of Engineers.

38. Bruno, M.S., McKee, T.G. and R.I. Hires, 1991. "Combined Hydraulic - Water Quality Model for the Arthur Kill Waterway, Report submitted to New York City Dept. of Sanitation.

39. Bruno, M.S., S. Leatherman and H. Bokuniewicz, 1991. "Sand Transport at the East Hampton Groins". Marine Sciences Research Center, SUNY Stony Brook.

40. Bruno, M.S. and T.O. Herrington, 1990. "Concrete Artificial Reefs and the Potential for Coal Fly Ash Utilization". Report SIT-DL-90-9-2652, Stevens Institute of Technology.

41. Bruno, M.S., 1989. "An Eulerian-Lagrangian Model for the Prediction of Ice Hazards in Shallow Coastal Waters". Report SIT-DL-89-9-2640 submitted to National Science Foundation, Stevens Institute of Technology.

42. Bruno, M.S., 1988. "The Feasibility of Sand-Bypassing for the Alleviation of Beach Erosion at Manasquan and Shark River, New Jersey", report prepared for the New Jersey Department of Environmental Protection, Division of Coastal Resources, New Jersey Institute of Technology.

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44. Bruno, M.S. and M. Muntisov, 1981. "Buoyancy-Driven Transverse Mixing in Streams", Report UCG/HEL 82/01, Univ. of California at Berkeley.

Funding

More than $50 million as either Principal Investigator or Co-Principal Investigator.

Partial List:

DHS

The National Center of Excellence in Maritime Security – $12 million (2008–2014)

DARPA

(with A. Blumberg). "Rapid Bottom Topography Mapping and Navigation in Remote and Poorly-Sampled Ocean Environments". $3.05 million (2006-2009)

Office of Naval Research

The Innovative Design and Control of Small Ships - $6 million (2002-2015)
The New York Harbor Observation System - $ 3.5 million (2003-2007)
Maritime Security - $14 million (2003-2007)
Ice-Water Resistance Force for Ice Floes - $141,000 (1994-1997)
Influence of Internal Waves on Sea Ice Motion - $106,000 (1992-1995)
Research Instrumentation Grant - $74,000 (1993-1994)
Young Investigator Award (Internal Wave Generation by Ice) - $223,000 (1991-1994)

National Science Foundation

Pan American Advanced Studies Institute (PASI): Toward a Sustained Operational River-to-Shelf Observation & Prediction System for the Amazon - $100,000 (2012)
Arctic Ocean Ice Movement Modeling in Support of Early Warning System - $54,000 (1989)

U.S. Department of Education

Improvement of Post-Secondary Science Education - $480,000 (2002-2003)
Ocean-Based Science and Mathematics Education - $500,000 (2001-2002)

U.S. Department of Transportation

Waterfront Portion of the Center for Maritime Systems - $1 million, 2002

U.S. Army Corps of Engineers

Impact on Shoreline of the Modification of Coastal Structures - $60,000 (1998-2000)
Manasquan Inlet Study - $19,000 (1996-1997)
Water Quality Modeling for the Passaic River Flood Tunnel Project - $171,000 (1994-1996)

National Oceanic and Atmospheric Administration

Sea Grant Coastal Specialist - $150,000 (1999-2005)
Influence of Human Factors on Shoreline Changes - $55,000 (1995-1998)
Reduction of Pollution in Marinas - $85,000 (1994-1996)
The Impact on Water Quality of Combined Sewer Overflows - $70,000 (1994-1995)

U.S. Coast Guard
Oil Spill Boom Behavior in Waves - $85,000 (1993-1995)

U.S. Geological Survey
Three-Dimensional Model of Pollutant Transport - $66,000 (1990-1993)

State of New Jersey
Coastal Protection Technical Assistance Service - $8,000,000 (1993-2009)
New Jersey Toxics Reduction Workplan - $580,000 (1999-2002)
Coastal Monitoring Network - $175,000 (1997-1998)
Artificial Reef Program - $280,000 (1994-1998)

New York City
Circulation and Water Quality Study of Fresh Kills Landfill - $160,000 (1990-1993)

Presentations

Numerous presentations at national and international meetings, **more than 150 invited.**

Thesis Supervisor

PhD – Richard Sheryl, New Technology for Uncontaminated and Pressure-Controlled Deep-Sea Sampler. May, 2009.

PhD – Peter Rogowski, A Technique for Optimizing the Placement of Oceanographic Sensors with Example Case Studies for the New York Harbor Region. May, 2009.

PhD – Srikanth Syamsundar, Conceptual Design of a Dynamically Reconfigurable Controller for a Multi-Role Surface Ship. May, 2006.

PhD – Soma Maroju, Performance Analysis of High Speed Vessels using Artificial Neural Networks. December, 2005.

PhD - Roy C. Messaros, A Laboratory Investigation of Bedform Geometry under Regular and Irregular Surface Gravity Waves. May, 2003.

PhD – Ms. Kathryn Ketteridge, Laboratory Study of Suspended Sediment Transport under Waves. September, 2001.

PhD – Mr. Xiao Li, A Hydrodynamic and Sediment Transport Model for Nearshore Coastal Regions. August, 2001.

PhD – Mr. Hugh Roarty, A Photographic Technique for the Measurement of Bedload Sediment Transport. April, 2001.

PhD. - Mr. Thomas Herrington, Analysis of Dominant Forcings in the Vicinity of a Tidal Inlet and Submerged Artificial Reef. June, 1996.

PhD. - Mr. Raju Datla, Interaction Between Submerged Turbulence and Surface Waves. June, 1996.

PhD. - Ms. Jennifer Waters, The Generation of Internal Waves by Sea Ice. May, 1995.

PhD. - Mr. A.K.M. Quamrul Ahsan, Three-Dimensional Modeling of Coastal Pollution Transport. January, 1993.

PhD. - Mr. Won Cho, Experimental Investigation of Surface Wave Instabilities. May, 1992.

MS – Ms Imali Kaluarachchi, Estimating the Volume and Salt Fluxes through the Arthur Kill and the Kill Van Kull. 2003.

MS - Mr. Steven Boenig, The Use of GENESIS in modeling complex shoreline dynamics. 2002.

MS – Mr. Jungu Kang, Sound Propagation in the East Sea. 1998.

MS - Mr. Sigmund Rutkowski, The Generation of Hurricane Waveforms in a Wave Tank Using Spectral Analysis. 1998.

MS - Mr. Kenneth Cadmus, The Influence of the Tide on Beach Profile Evolution. 1998.

MS - Mr. Hugh Roarty, A Photographic Technique for the Measurement of Suspended Sediment Transport. 1998.

MS – Ms. Susan Ming, Use of SBEACH Software in the Analysis of Southern California Beaches. 1997.

MS - Mr. Walter McKenna, The Effect of Man-Made Structures on Shoreline Changes at Atlantic City, New Jersey. 1997.

MS - Mr. Sherif Hassan, The Effect of a Shore-Parallel Reef on Mixing Rates in the Nearshore Region. 1996.

MS - Mr. Jun Yang, Laboratory Study of Wave Forces on a Submerged Stone Breakwater. 1996.

MS - Ms. Katherine Ketteridge, Laboratory Study of the Influence of Sand Permeability on Cross-Shore Transport. 1996.

MS - Mr. Jesse Falsone, Following Sea Behavior of America's Cup Class Sailboat. 1994.

MS - Ms. Jennifer Waters, Laboratory Investigation of Sea Ice Dynamics. 1993.

MS - Mr. Thomas Herrington, Hydrodynamic Analysis of Artificial Reefs. 1992.

MS - Mr. Christopher Obropta, Sediment Transport Along Northern New Jersey. 1988.

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TOWN OF NANTUCKET MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS

December 16, 2013

Mr. Ernie Steinauer
Chairman
Nantucket Conservation Commission
Nantucket, MA 02554

Re: Emergency Certification Application for Baxter Road Stabilization: 4 Geotube configuration

Dear Ernie and Commission,

This letter is given in support of the emergency certification application before you today for the above referenced coastal erosion control structure. As you are aware, DEP has issued an emergency permit for this work and provided guidance for the work. At their meeting held on Wednesday December 11, 2013, the Board of Selectmen voted to support this emergency certification application to the Nantucket Conservation Commission for approval under the Nantucket Wetlands Protection Bylaw.

SBPF and the Town of Nantucket are jointly submitting this emergency certification application for your approval. We look forward to discussing this with you at your earliest convenience.

Sincerely,

Kara H. Buzanoski
DPW Director